

# Interlayer Properties Reference Guide

Shear modulus, physical properties, and EN 16613 design values for common laminated glass interlayer materials

<b>Materials covered</b>	10 interlayer grades
<b>Standard conditions</b>	11 EN 16613:2019 loading scenarios
<b>Data source</b>	DMTA characterisation + time-temperature superposition
<b>Published</b>	June 2026

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# 1. Material Properties Summary

Physical and mechanical properties for all interlayer materials in the database. Values are representative and sourced from manufacturer datasheets and laboratory characterisation.

Material	Density (kg/m <sup>3</sup> )	Poisson Ratio	Tensile (MPa)	Elong. (%)	Adhesion	Temps Avail.
EVA	950	0.4900	12.0	800	High	5 (20 to 60°C)
SentryGlas	950	0.4783	34.5	400	High	12 (-20 to 80°C)
SentryGlas Xtra	950	0.4783	34.5	400	High	12 (-20 to 80°C)
Trosifol Clear	1070	0.4750	25.0	266	Medium	12 (-20 to 80°C)
Trosifol Extra Stiff	1080	0.4750	33.0	196	High	12 (-20 to 80°C)
Trosifol Extra Stiff Pro	1080	0.4750	34.0	200	High	9 (10 to 70°C)
Saflex Structural	1080	0.4750	33.0	196	High	11 (10 to 60°C)
Saflex Acoustic	1060	0.4750	22.0	269	Medium	11 (10 to 60°C)
Saflex Clear	1070	0.4750	23.0	270	Medium	11 (10 to 60°C)
Trosifol SC Monolayer	1070	0.4783	22.0	250	High	12 (-20 to 80°C)

*Tensile strength measured per ISO 527-3 (PVB, EVA, Sound Control) or ASTM D638 (Ionomer).*

## 2. Shear Modulus at EN 16613 Standard Conditions

Effective shear modulus  $G(t, T)$  in MPa for each material at the 11 standard loading conditions defined in EN 16613:2019 Table 4. Values are obtained by evaluating the relaxation master curve at the specified duration and temperature via log-log interpolation. Where the exact temperature is not in the dataset, Williams-Landel-Ferry (WLF) time-temperature superposition is applied.

Condition	t	T (°C)	EVA	SentryGlas	SG XtraT	Trosifol Clear	Trosifol ES	Trosifol ES	Stiflex Struc	Stiflex Acous	Stiflex Clear	Trosifol SC
1 - Wind gust	3 s	35	4.151	102.000	70.353	0.508	5.763	24.238	8.300	0.350	0.820	0.372
2 - Wind gust (cold)	3 s	-20	4.500	290.000	243.193	230.508	440.678	420.000	576.000	3.500	52.000	175.884
3 - Wind storm	10 min	35	3.262	47.700	22.019	0.322	0.780	0.880	0.570	0.150	0.370	0.176
4 - Wind storm cold	10 min	-20	4.500	284.000	226.619	122.034	267.797	420.000	576.000	3.500	52.000	57.500
5 - Balustrade	30 s	30	4.215	119.000	84.559	0.508	9.831	25.000	11.000	0.300	0.690	0.338
7 - Maintenance	30 min	40	2.352	11.400	7.002	0.197	0.610	0.600	0.400	0.080	0.270	0.088
8 - Snow (3 w)	3 w	0	4.500	222.000	75.089	1.356	4.407	278.269	552.149	1.620	12.406	0.406
9 - Snow (5 d)	5 d	20	4.128	130.000	29.528	0.319	1.051	2.200	1.400	0.100	0.320	0.108
10 - Climatic 6h	6 h	40	2.028	5.760	2.642	0.092	0.475	0.470	0.370	0.050	0.060	0.029
11 - Climatic 12h	12 h	60	0.902	1.350	0.612	0.061	0.163	0.180	0.240	0.010	0.100	0.037
12 - Permanent	50 yr	60	0.880	0.740	0.091	0.061	0.163	0.180	0.240	0.010	0.100	0.037

All values in MPa.  $t$  = load duration,  $T$  = reference temperature per EN 16613:2019. Condition 6 (soft body impact) not included as it requires dynamic analysis.

### 3. EN 16613:2019 Loading Conditions

The 11 standard loading conditions from EN 16613:2019 Table 4 used in the shear modulus lookup above. Each defines a design scenario with a specific load duration and reference temperature.

#	Condition	Duration	Temperature	Category
1	Wind gust	3 s	35°C	Wind
2	Wind gust (cold)	3 s	-20°C	Wind
3	Wind storm	10 min	35°C	Wind
4	Wind storm cold	10 min	-20°C	Wind
5	Balustrade	30 s	30°C	Balustrade
7	Maintenance	30 min	40°C	Imposed
8	Snow (3 w)	3 w	0°C	Snow
9	Snow (5 d)	5 d	20°C	Snow
10	Climatic 6h	6 h	40°C	Climatic
11	Climatic 12h	12 h	60°C	Climatic
12	Permanent	50 yr	60°C	Permanent

### 4. Notes and Disclaimers

**Data source:** Relaxation master curves are derived from Dynamic Mechanical Thermal Analysis (DMTA) with time-temperature superposition (TTS). WLF shift factors use default constants  $C1 = 17.44$ ,  $C2 = 51.6^\circ\text{C}$  unless material-specific values are available.

**Temperature interpolation:** Where the exact EN 16613 reference temperature is not directly available in the characterisation dataset, the relaxation curve is shifted using the Williams-Landel-Ferry (WLF) equation from the nearest available reference temperature.

**Intended use:** This reference guide is provided for preliminary design and material comparison purposes. Values should be verified against manufacturer datasheets and project-specific characterisation before use in structural design calculations or regulatory submissions.

**Interactive tools:** For detailed Prony series fitting, master curve generation, and custom time/temperature analysis, use the free simulation tools at [fractan.net](https://fractan.net).